F. DONLEY.

CONCRETE INSERT.

APPLICATION FILED NOV. 17, 1913.

1,265,064. Patented May 7, 1918.

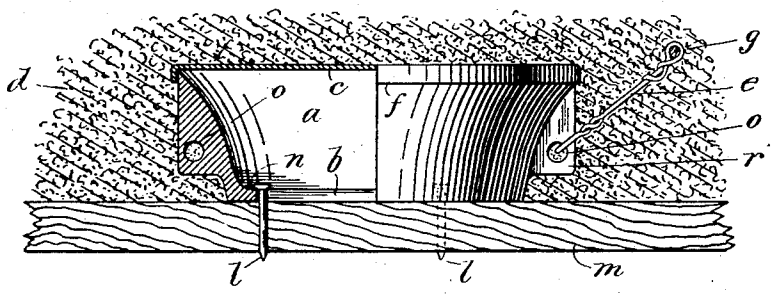


Fig. 1

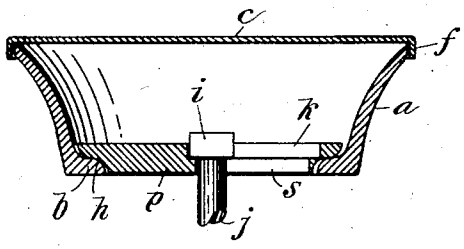


Fig. 2

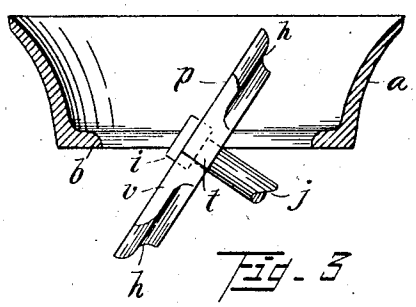


Fig. 3

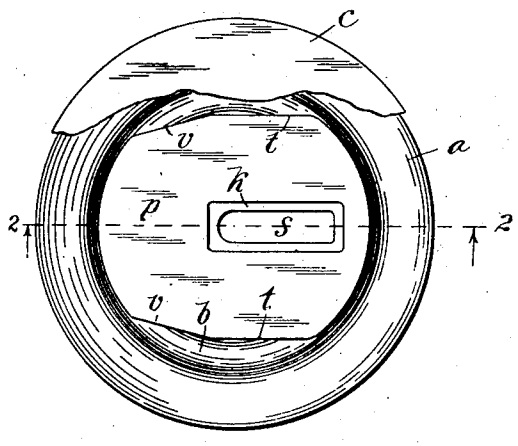


Fig. 4

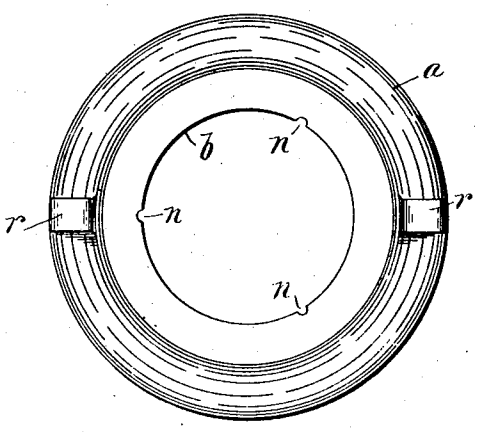


Fig. 5

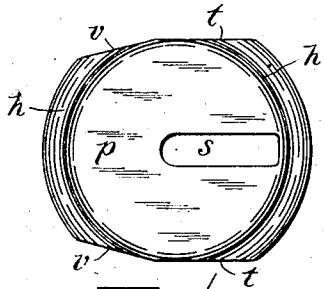


Fig. 6

Witnesses:
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Inventor,
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UNITED STATES PATENT OFFICE.

FORD DONLEY, OF CLEVELAND, OHIO, ASSIGNOR TO THE DONLEY BROTHERS COMPANY, OF CLEVELAND, OHIO, A CORPORATION.

CONCRETE-INSERT.

1,265,064. Specification of Letters Patent. Patented May 7, 1918.

Application filed November 17, 1913. Serial No. 801,347.

To all whom it may concern:

Be it known that I, FORD DONLEY, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in Concrete-Inserts, of which the following is a specification.

This invention relates to devices capable of insertion in structures of plastic material, such as concrete, and adapted to receive and hold a removable bolt.

The objects of my present invention are to provide in an insert for a concrete structure means for securing a bolt thereto, which may be more easily inserted or removed than heretofore; to provide a single removable bolt-plate permitting of universal adjustment of the position of the bolt within the circle of the device; to provide for securing an insert shell to a form-board or matrix without leaving the fastening means in the concrete, or breaking out portions of the latter and to secure strength, convenience and a neat appearance.

Referring now to the accompanying drawings illustrating embodiments of my invention:—

Figure 1 is a sectional view, partly in side elevation, of the insert shell temporarily secured to a form-board with concrete packed about it.

Fig. 2 is a section of the insert taken on line 2—2 of Fig. 4.

Fig. 3 is a section of the insert shell showing a bolt with its anchor-plate being inserted therein.

Fig. 4 is a plan view of the insert with its cover partly broken away.

Fig. 5 is a bottom view of the shell.

Fig. 6 is a bottom view of an anchor-plate.

The reference letter *a* indicates an annular shell of steel, semi-steel, or other suitable metal, having a larger diameter at one end than at the other, being preferably bell-shaped with its sides approximating a parabolic curve, as shown, and provided with an interior flange *b* at its smaller end. A suitable cover *c*, preferably of sheet iron or steel, is fitted to the larger end of the shell *a*, being provided with a peripheral flange *f*, or any other suitable means for keeping it in place. Thus the said shell and its cover is adapted to be embedded in concrete, or other plastic material *d*, as shown in Fig. 1, with its flanged end *b* flush with the surface of the structure.

The smaller end of the shell *a* is placed against a form or mold board *m* for a concrete ceiling, beam, wall, post, floor, or whatever the structure may be, and is rigidly, though temporarily, secured thereto by nails *l* driven into said board inside of the shell with their heads engaging the flange *b*. To further prevent the shell *a* being turned about, I provide shallow notches *n*, Fig. 5, in the flange *b*, preferably three of them, to receive the shanks of the nails *l*. Thus, when the form-board or matrix *m* is removed, the nails *l* come away with it, so that no nails, or other temporary fastenings, are left in, or projecting from the hardened concrete structure.

It is obvious that, upon the hardening of the plastic mass *d*, the shell *a* is firmly anchored therein by its flaring shape. I am aware that a conical shape has been suggested for the shell *a*, but by making said shell bell-shaped, as shown, I secure the strongest possible form of the concrete ring projecting from the mass about the shell and serving to anchor the latter in place; because the parabolic curved section shown makes with the surface of the structure a larger angle than the straight line of a conical dovetail would make, thereby strengthening the salient angle of the concrete where it has the greatest tendency to crumble and fracture. But if additional anchorage is desired, I form two or more ears *r* on the outside of the shell *a*, having apertures *o* therethrough to receive supporting-wires *e*, which wires are carried up, or into the structure, and made fast to any suitable support, such, for example, as the reinforcing bar *g* shown in Fig. 1. Said ears also serve to prevent rotary displacement of the shell.

The anchor-plate, or bolt washer, *p*, may have the contour of a circular zone; being a circular plate of steel, or other strong metal, rabbeted out on its under side, as shown at *h*, so as to fit loosely over and rest upon the flange *b* of the embedded shell, and having equal circular segments cut away from opposite sides of it, so that the edges *t*—*t* are straight and parallel with each other. But I prefer to bevel the edges of the plate *p* on one end, as at *v*—*v*, which permits of the plate being introduced into a more shallow

shell *a*, and also serves to better balance the plate. Starting at the center of the plate *p*, and extending parallel with the sides *t*, and preferably through the wider end of the plate, is a slot *s* fitted to receive loosely the shank of the anchor-bolt *j*. The upper face of the plate is rabbeted out about the slot, as at *k*, to form an elongated countersink in which the head *i* of the bolt may seat or slide, but cannot turn unless the plate *p* turns with it.

The shell *a* of the insert with its cover *c* being firmly and permanently fixed in the concrete structure, and it being desired to secure a bracket, hanger, or other device to the structure, a bolt *j* is first inserted through the slot *s* in the plate *p*, and the plate inserted, larger end first, diagonally into the shell, as shown in Fig. 3, and then tilted to a horizontal position when the beveled edges *v* have cleared the flange *b* of the shell, and brought to rest on said flange, as in Figs. 2 and 4. To remove the bolt and its plate the operation is simply reversed. It is obvious that plates *p* for different sized bolts may be used in the same shell *a*.

It will now be readily understood that a universal adjustment is secured, since the bolt *j* may slide radially to any position, and may be turned or swung, carrying the plate *p* with it, throughout the circle of the shell *a*, limited only by the length of the slot *s*. But when the bolt is tightened upon the device to be secured the latter is firmly anchored to the concrete structure.

Being assignee of an interest therein, I am aware of the pending application of William A. von Wolffradt for a patent on a concrete insert, filed Oct. 13, 1913, and serially numbered 794,812, showing a pair of anchor-plates in a conical shell. Therefore, I do not claim broadly anything shown in the said application, but further point out and distinctly claim as my invention:—

1. In combination with an annular insert shell for plastic material, an internal flange in said shell, a circular zone-shaped anchor-plate capable of insertion into the open end of said shell and fitted to rotate upon the inside of said flange, and a radial slot in said anchor-plate adapted to receive and seat an anchor-bolt so that said plate may be turned with said bolt.

2. In combination with an annular insert shell for plastic material, an internal flange in said shell, an anchor-plate having the contour of a circular zone beveled off at one end and fitted to be inserted into the open end of said shell and to rotate upon said flange, a radial slot in said anchor-plate, and an anchor-bolt adapted to slide in said slot and to turn and also to tighten said plate.

3. In an insert for plastic hardening structures; a self-anchoring shell flaring outwardly, a removable cover for the larger end of said shell, an internal flange in the smaller end of said shell, notches formed in the inner edge of said flange adapted to receive and engage means for temporarily fastening said shell to a matrix, and bolt-anchoring means engageable with said flange and insertible through the smaller end of said shell.

In testimony whereof I affix my signature in the presence of two subscribing witnesses, at Cleveland, Ohio, this 14th day of November, 1913.

FORD DONLEY.

Witnesses:
RAYMOND B. HOPPER,
E. WORTHINGTON.